

### REMARKS

Claims 105, 111-112 and 130 are amended. Claims 131 and 132 are added. Claims 105, 111-114 and 130-132 are pending in the application.

Claims 105, 112-113 and 130 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rostoker, U.S. Patent No. 5,744,399 in view of Herndon, U.S. Patent No. 4,843,034. In accordance with MPEP § 2143, an obviousness rejection has the following three requirements: 1) there must be some suggestion or motivation to modify or combine reference teachings; 2) there must be a reasonable expectation of success; and 3) the combined references must teach or suggest all of the claim limitations. Each of these three factors must be shown in order to establish a *prima facie* case of obviousness.

Claims 105, 112-113 and 130 are allowable over the combination of Rostoker and Herndon for at least the reasons that the references, individually or as combined, fail to disclose or suggest each and every element in any of those claims and fail to provide a basis for a reasonable expectation of success.

As amended, independent claim 105 recites providing an initial material adjacent a conductive electrical component, the initial material comprising pores having a size and comprising a mixture of carbon and  $\text{SiC}_x$ , where the providing comprises depositing carbon utilizing plasma decomposition of at least one precursor compound. Claim 105 additionally recites decreasing the dielectric constant of the initial material by vaporizing a portion of the initial material to expand the size of the pores. The amendments to claim 105 are supported by the specification at, for example, page 7, lines 11-18 and page 12, lines 11-16. Rostoker discloses formation of a composite dielectric layer which utilizes incorporation of a fullerene within an insulative matrix and subsequently removing the

fullerene (abstract; col. 1, ll. 43-53; col. 2, ll. 24-36). Rostoker further discloses that the composite layer is formed in such a manner as to not destroy the fullerene during the forming (col. 4, ll. 66 through col. 5, ll. 2), and indicates various deposition methods which can be utilized to avoid breaking down the fullerene (col. 5, ll. 2-25). Rostoker additionally discloses methods for removing the fullerene from the composite layer where the matrix material of the composite layer is silicon oxide, silicon nitride, aluminum oxide, undoped silicon or polyimide (col. 3, ll. 3042 and col. 7, ll. 21 through col. 9, ll. 3). Rostoker does not disclose or suggest the claim 105 recited providing an initial material having pores and comprising a mixture of carbon and  $\text{SiC}_x$ . Nor does Rostoker disclose the claim 105 recited method comprising depositing carbon utilizing plasma decomposition of at least one precursor compound, or the recited vaporizing a portion of a material comprising a mixture of carbon and  $\text{SiC}_x$  to expand the size of the pores within the material. Further, Rostoker does not provide a basis for a reasonable expectation of success of the claim 105 recited depositing of a mixture of carbon and  $\text{SiC}_x$  comprising utilizing plasma decomposition of at least one precursor compound and the subsequent vaporization of a portion of the initial material to expand the size of the pores.

As indicated at page 3 and page 7 of the present Action, Herndon is relied upon as showing that silicon carbide is insulative. The Herndon disclosure further indicates that the disclosed silicon carbide is utilized due to its potential to be rendered conductive by ion implantation (col. 3, ll. 45 through col. 4, ll. 10). As combined with Rostoker, the Herndon disclosure of utilizing an insulative material such as silicon carbide for its ability to be rendered conductive does not contribute toward suggesting the claim 105 recited providing an initial material comprising pores and comprising a mixture of carbon and  $\text{SiC}_x$ , or the

claim 105 depositing carbon utilizing plasma decomposition of at least one precursor compound. Nor does the Herndon disclosure contribute toward suggesting the claim 105 recited vaporizing a portion of a material comprising a mixture of carbon and  $\text{SiC}_x$  to expand the size of the pores. Further, the utilization of silicon carbide due to its ability to be rendered conductive as disclosed in Herndon does not contribute towards providing a basis for a reasonable expectation of achieving the claim 105 recited expanding the size of pores in an initial material comprising a mixture of carbon and  $\text{SiC}_x$  by vaporizing a portion of the initial material. Accordingly, independent claim 105 is not rendered obvious by the cited combination of Rostoker and Herndon and is allowable over these references.

Claims 112 and 130 are amended to properly depend from claim 105. The amendment to claim 130 is further supported by the specification at page 7, lines 12-18. Dependent claims 112, 113 and 130 are allowable over the cited combination of Rostoker and Herndon for at least the reason that they depend from allowable base claim 105.

Claim 111 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Rostoker and Herndon in further view of Gnade, U.S. Patent No. 5,494,858. As indicated at page 5 of the present Action, Gnade is relied upon as showing formation of a layer 26 over a porous dielectric layer 28 prior to evaporating a portion of layer 28 to increase the size of the pores. As combined with Rostoker and Herndon, the Gnade disclosure indicates formation of underlying layer 25 (28) utilizing TEOS to form a gel and subsequently drying the gel (col. 4, ll. 47 through col. 5, ll. 26). The Gnade disclosure of forming a gel layer from a mixture comprising TEOS and formation of an overlying layer prior to drying the gel does not contribute toward suggesting the claim 105 recited providing an initial material comprising a mixture of carbon and silicon, or the recited depositing

carbon utilizing plasma decomposition of at least one precursor compound, or the recited vaporizing a portion of an initial material comprising a mixture of carbon and  $\text{SiC}_x$ . Accordingly, independent claim 105 is not rendered obvious by the cited combination of Rostoker, Herndon and Gnade. Dependent claim 111 is amended to properly depend from claim 105. Claim 111 is allowable over the recited combination of Rostoker, Herndon and Gnade for at least the reason that it depends from allowable base claim 105.

Claim 114 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Rostoker and Herndon as further combined with Matthews, U.S. Patent No. 5,171,713, and TeVelde, U.S. Patent No. 4,561,173. As indicated at page 6 of the present Action, both Matthews and TeVelde are relied upon as showing support structures used in air gaps to provide support between metallization structures. However, as combined with Herndon and Rostoker, the disclosed support structures of Matthews and TeVelde do not contribute toward suggesting the claim 105 recited initial material comprising pores and comprising a mixture of carbon and  $\text{SiC}_x$ , or the claim 105 recited depositing carbon utilizing plasma deposition of at least one precursor compound, or the recited vaporizing a portion of an initial material comprising a mixture of carbon and  $\text{SiC}_x$  to expand the size of the pores. Further, neither Matthews nor TeVelde contribute toward providing a basis for a reasonable expectation of successfully achieving expanded pore size by vaporizing a portion of an initial material which comprises a mixture of carbon and  $\text{SiC}_x$ . Accordingly, independent claim 105 is not rendered obvious by the cited combination of Rostoker, Herndon, Matthews and TeVelde. Claim 114 is allowable over the combination of Rostoker, Herndon, Matthews and TeVelde for at least the reason that it depends from allowable base claim 105.

New claims 131 and 132 do not add "new matter" to the application since each is fully supported by the specification as originally filed. Claim 131 is supported by the specification at, for example, page 8, lines 11-16. Claim 132 is supported by the specification at, for example page 8, lines 17-20. Claims 131 and 132 are allowable over the art of record for at least the reason that they depend from allowable base claim 105.

For the reasons discussed above, pending claims 105, 111-114 and 130-132 are allowable. Accordingly, applicant respectfully request formal allowance of such pending claims in the Examiner's next action.

Respectfully submitted,

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